

Atty Docket No. 2771-594 CIP

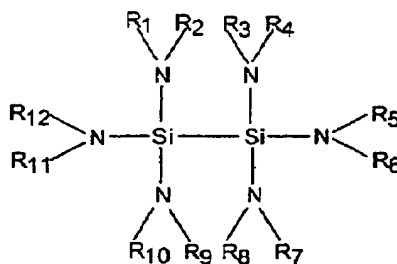
AMENDMENTSIN THE CLAIMS:

Please amend claims 1, 7, 18 and 21 as set forth below.

Complete Listing of the Claims

Upon entry of the present amendment, the claims will stand as follows. The following listing of the claims will replace all prior versions and listings of the claims in the present application:

1. (Currently amended) A silicon compound comprising a disilane derivative that is fully substituted with alkylamino and/or dialkylamino functional groups, with the proviso that not all functional groups are simultaneously dimethylamino.
2. (Original) The silicon compound of claim 1, characterized by two or more alkylamino and/or dialkylamino functional groups symmetrically distributed in relation to the Si-Si bond.
3. (Original) The silicon compound of claim 1, characterized by two or more alkylamino functional groups symmetrically distributed in relation to the Si-Si bond.
4. (Original) The silicon compound of claim 1, characterized by two or more dialkylamino functional groups symmetrically distributed in relation to the Si-Si bond.
5. (Original) The silicon compound of claim 1, characterized by a melting temperature of less than 100°C.
6. (Original) The silicon compound of claim 1, characterized by a vaporization temperature of less than 300°C.
7. (Currently amended) A silicon compound having the formula:



wherein:

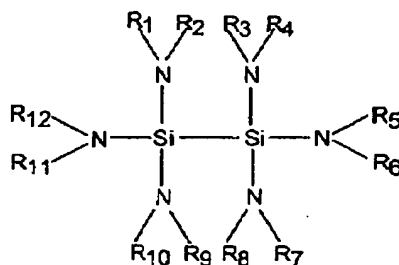
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R₁-R₁₂ may be the same as or different from one another and each is independently selected from the group consisting of H, C₁-C₅ alkyl, and C₃-C₆ cycloalkyl, with the proviso that not all R₁-R₁₂ are simultaneously dimethylamino.

8. (Original) The silicon compound of claim 7, characterized by two or more alkylamino and/or dialkylamino functional groups symmetrically distributed in relation to the Si-Si bond.
9. (Original) The silicon compound of claim 7, characterized by two or more alkylamino functional groups symmetrically distributed in relation to the Si-Si bond.
10. (Original) The silicon compound of claim 7, characterized by two or more dialkylamino functional groups symmetrically distributed in relation to the Si-Si bond.
11. (Original) The silicon compound of claim 7, characterized by a melting temperature of less than 100°C.
12. (Original) The silicon compound of claim 7, characterized by a vaporization temperature of less than 300°C.
13. (Original) A silicon compound selected from the group consisting of: (NEt₂)₂(HNMe)Si-Si(HNMe)(NEt₂)₂, (HNBu^t)₂(HNMe)Si-Si(HNMe)(HNBu^t)₂, and (HNBu^t)₂(NH₂)Si-Si(NH₂)(HNBu^t)₂.
14. (Withdrawn) A method for forming a silicon compound as in claim 13, comprising one of the following reactions:
 - (1) (NEt₂)₂(Cl)Si-Si(Cl)(NEt₂)₂ + excess H₂NMe → (NEt₂)₂(HNMe)Si-Si(HNMe)(NEt₂)₂ + 2H₂NMe·HCl;
 - (2) (HNBu^t)₂(Cl)Si-Si(Cl)(HNBu^t)₂ + 2 LiN(H)Me → (HNBu^t)₂(HNMe)Si-Si(HNMe)(HNBu^t)₂ + 2LiCl; and
 - (3) (HNBu^t)₂(Cl)Si-Si(Cl)(HNBu^t)₂ + 2LiNH₂ → (HNBu^t)₂(NH₂)Si-Si(NH₂)(HNBu^t)₂ + 2LiCl.
15. (Withdrawn) A method of forming a silicon-containing film on a substrate, comprising contacting a substrate under chemical vapor deposition conditions with a vapor of a silicon compound as in claim 1.
16. (Withdrawn) A method of forming a silicon-containing film on a substrate, comprising contacting a substrate under chemical vapor deposition conditions with a vapor of a silicon compound as in claim 7.

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17. (Withdrawn) A method of forming a silicon-containing film on a substrate, comprising contacting a substrate under chemical vapor deposition conditions with a vapor of a silicon compound as in claim 13.
18. (Withdrawn - Currently Amended) A composition for chemical vapor deposition of a silicon-containing film on a substrate, said composition comprising (i) one or more disilane derivatives that are fully substituted with alkylamino and/or dialkylamino functional groups, with the proviso that not all functional groups are simultaneously dimethylamino, and (ii) one or more hydrocarbon solvents.
19. (Withdrawn) The composition of claim 18, wherein said hydrocarbon solvents comprise HN^iPr_2 .
20. (Withdrawn) The composition of claim 18, comprising at least two disilane derivatives.
21. (Currently amended) A composition for chemical vapor deposition of a silicon-containing film on a substrate, said composition comprising:
- (a) one or more silicon compounds having the formula:



wherein:

R_1 - R_{12} may be the same as or different from one another and each is independently selected from the group consisting of H, C_1 - C_5 alkyl, and C_3 - C_6 cycloalkyl, with the proviso that not all R_1 - R_{12} are simultaneously dimethylamino; and

- (b) one or more hydrocarbon solvents.
22. (Original) The composition of claim 21, wherein said hydrocarbon solvents comprise HN^iPr_2 .
23. (Original) The composition of claim 21, comprising at least two disilane derivatives.
24. (Withdrawn) A method of forming a silicon-containing film on a substrate, comprising the steps of:
- (a) providing a composition as in claim 18;
- (b) vaporizing said composition to form a precursor vapor; and

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- (c) contacting the substrate under chemical vapor deposition conditions with said precursor vapor to form said silicon-containing film.
25. (Withdrawn) The method of claim 24, wherein said composition is vaporized at a temperature that is not higher than 300°C.
26. (Withdrawn) The method of claim 24, wherein said composition is vaporized at a temperature that is not higher than 150°C.
27. (Withdrawn) The method of claim 24, wherein said silicon-containing film comprises silicon nitride.
28. (Withdrawn) A method of forming a silicon-containing film on a substrate, comprising the steps of:
- (a) providing a composition as in claim 21;
 - (b) vaporizing said composition to form a precursor vapor; and
 - (c) contacting the substrate under chemical vapor deposition conditions with said precursor vapor to form said silicon-containing film.
29. (Withdrawn) The method of claim 28, wherein said composition is vaporized at a temperature that is not higher than 300°C.
30. (Withdrawn) The method of claim 28, wherein said composition is vaporized at a temperature that is not higher than 150°C.
31. (Withdrawn) The method of claim 28, wherein said silicon-containing film comprises silicon nitride.

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